**Claims**

1. Process for the production of high-purity 1,2-dichloroethane using a circulating stream of liquid reaction fluid which mainly consists of 1,2-dichloroethane and a catalyst, in which at least ethylene and chlorine are admixed to the reaction fluid, characterised in that
   - a gas stream with chlorine as the main constituent is dissolved in a portion of the reaction fluid, which is essentially free of dissolved ethylene,
   - the gaseous constituents non-dissolved in this solution, being removed from the said solution by means of a centrifugal gas separator as device for gas separation and
   - the solution freed from non-dissolved gas constituents being brought into contact with solute ethylene supplied for this purpose.

2. Process according to claim 1, characterised in that at least part of the gaseous constituents that have been removed from the chlorine-containing solution by the gas separator are admixed to the reaction fluid at a point of the reaction section, the reactor or a dissolving device, in which the reaction of chlorine with ethylene for forming 1,2-dichloroethane has almost terminated or can no longer take place.

3. Process according to claim 2, characterised in that the gaseous constituents which have been removed from the chlorine-bearing solution by the gas separator are admixed to the reaction fluid downstream of the reaction section in which the chlorine reacts with the ethylene to yield 1,2-dichloroethane.

4. Process according to claim 1, characterised in that at least part of the gaseous constituents removed from the chlorine-bearing solution by means of the gas separator are fed to a facility for secondary reaction, this facility being operated at a lower temperature than applied to the main reaction.

5. Process according to claim 1, characterised in that at least part of the gaseous constituents removed from the chlorine-bearing solution by means of the gas separator are fed to a facility for the incineration of residues without rendering inert.

6. Process according to claim 1, characterised in that at least part of the gaseous constituents removed from the chlorine-bearing solution by means of the gas separator are fed to a chlorination facility.

7. Process according to claim 6, characterised in that the chlorination facility serves to convert light ends from a plant for monomer vinyl chloride production from 1,2-dichloroethane to heavy ends.